NASA

# Commitments to Action

## Team Plans from the Second NASA Symposium on Quality and Productivity

December 2 — 3, 1986

# COMMITMENTS TO ACTION

Team Plans
from the Second NASA Symposium
on Quality and Productivity
December 2-3, 1986

Assembled by
The Office of NASA Productivity Programs

# INTRODUCTION

A unique aspect of the Second NASA Symposium on Quality and Productivity held in Washington, DC, in December 1986, was that attending organizations were invited to send teams of high-level executives in addition to individuals. The philosophy behind this request was that high-level managers--decision makers--can effect change in an organization and would conceivably be more effective if they could share their thoughts and perceptions on what was learned with other team members and arrive at a consensus for actions which could be initiated to increase the quality of goods and services and the productivity of the work force within their organizations. Since the symposium, we have contacted the various team leaders and verified and updated the team members. We also asked each of the responding organizations to formalize their commitments to action. This booklet contains those commitments.

In December 1987, the organizations represented in this booklet will be asked to provide a one- or two-page synopsis of their progress toward meeting these commitments. These will be compiled and published by NASA in February 1988. For those organizations not represented in this forum and who wish to join in this effort, you are invited to submit your commitments to action to NASA Headquarters, Code ADA, Washington, DC 20546, and we will include them in the publication reflecting the final results of actions and programs.

We are pleased to present commitments to increase quality and productivity and trust this process will provide a valuable compilation of activities, while, at the same time, creating a network for communication throughout the community.

C. Robert Nysmith

C. Robert Nysmith
Director, NASA Productivity Programs

Washington, DC, May 1987

TABLE OF CONTENTS


| | Page |
|---|---|
| Ball Aerospace Systems Division | 1 |
| BAMSI, Inc | 2 |
| Bendix Aerospace | 4 |
| Bendix Field Engineering Corporation | 5 |
| Boeing Aerospace Company | 7 |
| The Boeing Company - Huntsville Division | 8 |
| Boeing Aerospace Operations - Houston Operations | 9 |
| Boeing Computer Services | 10 |
| Boeing Computer Support Services | 11 |
| Computer Sciences Corporation - Applied Technology Division | 12 |
| Computer Sciences Corporation - System Sciences Division | 15 |
| U.S. Department of Agriculture - Agricultural Research Service | 17 |
| United States Air Force - Air Force Systems Command | 18 |
| Headquarters - U.S. Army Materiel Command | 19 |
| U.S. Department of Commerce | 26 |
| Naval Air Systems Command | 27 |
| Department of the Navy - Office of the Assistant Secretary for Shipbuilding and Logistics | 28 |
| EG&G Florida | 30 |
| Fairchild Space Company | 31 |
| Gulfstream Aerospace Corporation | 32 |
| Hercules Aerospace Company - Aerospace Products Group | 33 |
| Hercules Aerospace Company - Instrument Systems Division | 35 |
| Honeywell, Inc. - Space and Strategic Avionics Division | 36 |
| Lockheed Engineering and Management Services Company, Inc | 39 |

Lockheed - Georgia Company..... 40

Lockheed Missiles & Space Company, Inc..... 41

LTV Missiles and Electronics Group - Missiles Division..... 43

McDonnell Douglas Astronautics Company - Engineering Services..... 45

McDonnell Douglas Astronautics Company - Huntsville Division..... 47

McDonnell Douglas Electronics Company..... 48

Martin Marietta Corporation - Denver Aerospace..... 49

Martin Marietta Corporation - Michoud Aerospace..... 51

Morton Thiokol, Inc. - Wasatch Operations..... 55

National Aeronautics and Space Administration

- Office of Aeronautics and Space Technology, NASA Headquarters..... 57
- Office of Equal Opportunity Programs, NASA Headquarters..... 59
- Budget and Administrative Services Branch, NASA Headquarters..... 60
- Human Resources Management, NASA Headquarters..... 61
- Information Systems and Technologies Office..... 62
- Supply and Equipment Management Office..... 63
- Security..... 64
- Management Analysis Office..... 65
- Directives and Reports Branch..... 67
- Personnel Programs Division..... 68
- Information Resources Management Division and Facilities Engineering Division..... 69
- Office of Space Science and Applications..... 70
- Jet Propulsion Laboratory..... 71
- Lyndon B. Johnson Space Center..... 72
- Langley Research Center..... 73
- Lewis Research Center..... 74
- George C. Marshall Space Flight Center..... 75

National Space Technology Laboratories..... 76

Pan Am World Services, Inc. - Aerospace Division..... 80

Perkin-Elmer Corporation - Optical Group..... 82

Raytheon Service Company - Logistics Support Division..... 84

RCA Aerospace and Defense - Astro-Space Division..... 85

RCA Service Company - RCA Government Services..... 86

Rockwell International Corporation - Space Transportation Systems Division..... 87

The Singer Company - Space Programs Operations, Link Flight Simulation Division..... 88

Spar Aerospace Limited - Remote Manipulator Systems Division..... 89

TRW Inc. - Electronics and Defense Sector..... 91

Unisys Defense Systems..... 94

United Technologies - Norden Systems, Inc..... 95

# QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Ball Aerospace Systems Division

Address: P.O. Box 1062
Boulder, CO 80306

Commitment to Action:

1. Action: Ball Aerospace Systems Division (BASD) has implemented a quality improvement program called "The Challenge: Pride in Excellence," and is the overall division program for achieving improvement in the quality of our products, processes, and worklife, and in our productivity as individuals, as projects, and as a company.

2. Anticipated Benefits: The program is based on two criteria: (1) do it right the first time and (2) define the requirements for the task to be accomplished. Using these criteria, performance roadblocks will be removed, tasks will be performed based on a defined end result, and overall productivity and quality will be increased significantly.

3. Approach: The program is being implemented from the top, down. An executive Improvement Team, consisting of the president and vice presidents, plans, directs, and monitors the successful implementation of "The Challenge: Pride in Excellence" program throughout BASD. Each vice president has an Organization Improvement Team that implements the program in his respective organization. Individual employees identify quality and productivity-related roadblocks through the use of Pride in Excellence Action Requests which must be resolved and/or answered by their supervisor.

4. Timeframe: The duration of this effort is long term.

# QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: BAMSI, Inc.

Address: 1650 Chaffee Drive
Titusville, FL 32780

(Mail): P.O. Box 1659
Titusville, FL 32781-1659

Commitment to Action:

1. Action: (1) Increase productive hours of the BAMSI work force by decreasing the nonproductive leave hours by 1 percent over the next 12 months.

   (2) Increase employees awareness of the importance of serving the customer's needs better, faster, and smarter.

   (3) Educate and sensitize every customer to BAMSI's overall technical support capabilities in addition to those specifically contracted to perform at that customer's location.

2. Anticipated Benefits: Successful accomplishment of Action Item (1) will result in a measurable increase in the number of productive hours that BAMSI delivers to every customer.

   Success on achieving Action Item (2) will result in notable improvement in employee morale with a valuable secondary benefit of improved quality of service delivered to our customers.

   Successful accomplishment of Action Item (3) will help educate the customer to what BAMSI is capable of doing in addition to those services under contract for BAMSI to perform.

3. Approach: BAMSI intends to implement this program to improve productivity at a Corporate Manager's Conference scheduled for April 14-18, 1987. At that Conference, the Project Managers and Corporate Staff will be informed of the corporate goals of the program outlined above and asked to commit themselves to implementing a program at their contract location tailored to meet their own project's needs.

   The corporate commitment to this program will be in the form of motivation through handout materials and letters of acknowledgment and explanation, correspondence directed to the employee work force encouraging their personal dedication to the goals of the program, and limited formal training for the Program facilitator at each contract location. Contact with the employees will encourage their support and participation by soliciting their ideas and recommendations to make the program work better.

4. Timeframe: The program outlined herein has goals that can be measured monthly from data taken from employee time cards. This data, when compared to statistical historical data, will enable BAMSI to note trends indicating positive results or possibly a need for stepped-up education activities. As the program develops, results should become evident through notable improvements in the quality, timeliness, and economy of operation at each BAMSI contract location. In turn, this should result in higher evaluations of BAMSI's performance at each contract location.

   For BAMSI, the program outlined herein reflects a commitment to excellence in every facet of our operation. It is a program designed to yield measurable results immediately and over the long term. As BAMSI becomes a more efficient organization of dedicated employees, our productivity will result in an enviable reputation that BAMSI is a company whose name is synonymous with a standard of excellence.

# QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Bendix Aerospace Sector

Address: 100 Wilson Boulevard
Arlington, VA 22209

Commitment to Action:

1. Action: Maintain an energetic continuous improvement process covering our services and products.

2. Anticipated Benefits: This effort will reduce costs and improve productivity and quality.

3. Approach: Our approach is to leverage off of the ability of our people to develop ideas for improvement. Additionally, we are implementing "Statistical Process Control" and the "Integration of Design and Manufacturing" in all of our Divisions.

4. Timeframe: There is no end date for continuous improvement. However, we have identified specific tasks that must be initiated in the short run, e.g., each Division must have at least one project using the "Best Practices" guidelines for integration of design and manufacturing within 6 months.

# QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Bendix Field Engineering Corporation

Address: One Bendix Road
Columbia, MD 21045

Commitment to Action:

1. Action: Bendix Field Engineering Corporation (BFEC) is a service industry-oriented entity; our product is primarily our people--dedicated technical, administrative, and management personnel. Using a total quality leadership approach, BFEC will strive to sustain a work environment predicated on corporate-wide values of quality workmanship, innovation, and customer satisfaction.

2. Anticipated Benefits: Benefits mutual to BFEC and the customer include the following:

   - o Continuity of a technical and management work force capable of implementing and supporting service industry evolution.
   - o Retention of a skilled work force; enhancement of personnel skills to meet technical service evolution.
   - o Effective employee/management relations.
   - o Sustained service excellence.
   - o Effective cost management and reporting systems.

3. Approach: The following is an excerpt from the BFEC Productivity Improvement and Quality Enhancement Program (policy) manual. It delineates our established approach to action, process review, and evaluation of results.

   "BFEC has recognized that a major component in the successful implementation of the Productivity Improvement and Quality Enhancement Program is training. Training in productivity improvement includes all personnel at all levels of the organization.

   BFEC's approach to training personnel in the theories of productivity and quality improvement is built on the total organization involvement (cascading) training model. In this model, the highest level of personnel agree upon corporate quality and productivity goals for a period of time. By following the cascading model, these goals are made clear to all employees throughout the organization, using traditional and formal lines of communication.

   The implementation of this model begins with the BFEC Productivity Council, the Executive Committee, directors, and key program managers

participating in discussion sessions to reinforce BFEC's philosophy of productivity and quality improvement. In such sessions, these executives will discuss and agree on the productivity and quality goals and performance measures for a period of time. This group will review specific productivity activities, including goals, objectives, training plans, awards, recognitions, and procedures for the implementation of the BFEC Productivity Improvement and Quality Enhancement Program.

Following these direction-setting sessions, the directors and key program managers meet with their subordinate managers to formulate specific departmental productivity improvement plans.

The managers then communicate the departmental productivity plan, including specific goals and objectives, to the supervisors, who in turn communicate it to their employees.

These departmental goals and objectives are shared with the Department Productivity Coordinator to enhance the direction of the department Productivity Enhancement Teams (PET's) and all employees. With a knowledge of the specific goals and objectives, the employees can then focus their attention on the most critical work-related projects.

This total cascading approach is designed to improve communication, increase employee involvement and motivation, and provide the foundation for increased productivity and quality."

4. Timeframe: The BFEC Productivity Improvement and Quality Enhancement Program is both a medium- and long-range effort. The program is based on current contracts and subcontracts; BFEC incorporates immediate customer needs and concerns, and through effective communication and coordination, strives to satisfy perceived and potential (unperceived) requirements. The medium-range quality planning and implementation approach is based on current requirements and is projected through the option years of the contract.

   Long-range quality and productivity planning is based on long-term corporate plans, strategic goals, and potential future technologies. Based on total quality leadership, and using the capabilities of both management and technical personnel, BFEC analyzes the evolutionary service industry environment. BFEC plans and develops the organizational processes necessary to implement change, and sustain the equally evolutionary nature of quality and productivity. Through medium- and long-range planning, BFEC constantly strives for excellence.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Boeing Aerospace Company

Address: Mr. Arthur E. Hitsman
Vice President, Operations
Boeing Aerospace Company
P.O. Box 3999 M/S 85-77
Seattle, WA 98124

Commitment to Action:

The Boeing Aerospace Company has established Quality Improvement as a major initiative and has been working for some years toward continuous improvement in all processes of the company. As a result of the NASA Quality and Productivity Symposium, our team decided to focus their attention on two processes.

Improve the Full-Scale Development Process. A large number of programs involve full-scale development with limited fabrication of developmental and test hardware. Past practices of using in-house processes designed for production of mature hardware was proving to be not only costly but lacking the flexibility to rapidly respond to changing designs. Such change is inherent in a developmental process and must be accommodated without detriment to configuration management and quality. A streamlined process is being established for design, fabrication, and test of developmental hardware and software. The new process will eliminate nearly all of the production paper and control systems which were inappropriate for developmental fabrication and thus allow the full-scale development process to be performed at less cost through a combination of reduced hours and lower rates. The new process will be first implemented on a pilot basis.

Improve the Computing Maintenance Process. The number of computers in the workplace is expanding; maintenance costs will rise as well. The current practice is to subcontract most maintenance, which is expensive and not as responsive as required. In-house capability is being developed to handle the maintenance. A joint Union/Management team has been established to monitor and resolve problems in changing the process. The benefits will be in availability of equipment, actual maintenace costs, and reduce inter-organization coordination.

In addition to improving the above processes, the team agreed that there needed to be an increase in the number of people who are trained in the quality improvement process, especially for management.

These efforts are only a small part of The Boeing Aerospace Company's Quality Improvement activities, yet they reflect the priorities of this team.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: The Boeing Company - Huntsville Division

Address: P.O. Box 1470
Huntsville, AL 35807

Commitment to Action:

1. Action: We plan to (1) expand our quality circles and Operation Eagle programs with emphasis on implementation of productivity ideas that are generated and (2) perform and organization effectiveness study to eliminate duplication and provide clear lines of responsibility in carrying out prime and support task.

2. Anticipated Benefits: The actions will (1) create an atmosphere for progress by having the employees aware of the emphasis on implementing productivity ideas not just on identifying them. (2) An organization in being for years always builds up overlaps in responsibility and duplications in carrying out the tasks assigned. By identifying clearly which parts of the organization have prime and support responsibilities and communicating these responsibilities to the individuals within the organization should reduce cost by as much as 25 percent.

3. Approach: (1) Expanding quality circles and Operation Eagle programs will be accomplished by posters, internal company media, etc. Placing emphasis on implementation council reporting to the vice president and general manager. This council will be available to review and approve quality circle and Operation Eagle productivity implementation plans, including authorizing necessary funds, facilities, and resources. (2) A survey will be conducted by a special task team to gather and display how the organization accomplishes its responsibility including inputs to the various levels within the organization and the outputs. Identification as to who is prime and who is support will be made as well as who has what authority. This will then be reviewed by all the personnel and management and reiterated until everyone is in agreement.

4. Timeframe: Item #1 will be a continuing process over a long period of time and item #2 will be over a short period but will be redone at any time there is a major reorganization.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Boeing Aerospace Operations
Houston Operations

Address: 1045 Gemini
Houston, TX 77058

Commitment to Action:

1. Action: "Operation Eagle" is the name for the Boeing corporate program for Productivity and Quality Improvement. It embodies:

   - o A cost-reduction program.
   - o Quality improvement.
   - o Employee recognition.

   Policies and procedures for "Operation Eagle" are in place and will be observed throughout 1987.

2. Anticipated Benefits:

   - o Cost reduction of $554,000.
   - o Participation by 70 percent of all personnel.

3. Approach:

   - o Management involvement.
   - o Training for all employees relative to productivity and quality improvement.

4. Timeframe: Medium--1 to 5 years--length of contract.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Boeing Computer Services

Address: P.O. Box 24346, M/S 7A-49
Seattle, WA 98124-0346

Commitment to Action:

1. Action: A Total Quality Commitment (TQC) process is being implemented BCS-wide. TQC has a focus on control and continuous improvement of the quality and productivity of our business processes.

2. Anticipated Benefits:

   - o Improved quality.
   - o Improved cost-effectiveness of business processes.
   - o Increased customer satisfaction.
   - o Improved employee morale.
   - o Decreased product/service unit costs.
   - o Increased productivity.
   - o Job security.

3. Approach:

   - o Top-down implementation led by the president and his staff.
   - o Education and training in quality disciplines and statistical techniques.
   - o Ownership and continuous improvement of our business process.

4. Timeframe:

| Action | Timeframe |
|---|---|
| o Initiation and management training. | short |
| o Process ownership and improvement. | medium |
| o All BCS employees trained and working in the TQC environment. | medium |
| o TQC process part of BCS culture. | long |

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Boeing Computer Support Services

Address: 7980 Boeing Court
Vienna, VA 22180

Commitment to Action:

1. Action: The Boeing Computer Services Management objective is to implement the Total Quality Commitment (TQC) in all contracts during 1987. TQC is structured process based on quality management that provides continual improvement in the way all employees do their work every day, from senior management level through the organization to every employee.

2. Anticipated Benefits: It is estimated by both Dr. W.E. Deming and Dr. J.M. Juran (international experts in quality improvement) that 15 percent or more of our total operating budget typically represents waste within quality and increase productivity because things are done right the first time. Boeing Computer Services anticipate that implementation of the TQC, will result in improved company employee relations, an improvement of quality, increased productivity, and a lower cost to our customers.

3. Approach: TQC will be implemented in Boeing Computer Support Services from the top, down. Training in TQC methodology has commenced with senior-level management and will include management at all levels. The TQC process focuses on the identification and restructuring of systems which waste materials, resources, and time. An operating system and structure (i.e., Quality Councils) will be established and each department will develop their own quality improvement plan which will identify high-leverage areas for quality improvement. Interdisciplinary improvement teams will be formed to evaluate these areas from a systems viewpoint and teams formed to work the identified selected areas for improvement. Senior-level management involvement ensures the overall system is fixed for employees to produce quality products and services. Finally, a measuring and tracking system will be devised to track gains to be realized in the identified high-leverage areas.

4. Timeframe: The TQC process is a long-term effort. While some gains will be realized in the near term, real savings and paybacks will be realized in the 4- to 5-year timeframe.

# QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Computer Sciences Corporation
Applied Technology Division

Address: 6521 Arlington Blvd.
Falls Church, VA 22042

Commitment to Action:

1. Action: We propose to establish a PIQE Program at each contracts center. Each program will be patterned after the PIQE Program implemented at our Houston Center, and tailored to the customer's desires. The components of the Houston Plan are as follows:

   - o Houston Center PIQE Council.
   - o PIQE Employee of the Month and Year Awards.
   - o Annual PIQE Award Banquet.
   - o Quality Circles.
   - o PIQE Suggestion System.
   - o Employee/Manager Communications.
   - o PIQE Awareness Activities.
   - o PIQE Training.
   - o Measuring Quality and Productivity Achievements.
   - o The PIQE Data Base.

2. Anticipated Benefits: The benefits to be derived are as follows:

   - o Increase employee productivity and morale through participative management.
   - o Improve communication throughout the organization.
   - o Institute a viable PIQE organizational structure with well-defined roles and responsibilities.
   - o Establish PIQE awareness throughout the entire organization from top to bottom.
   - o Provide incentive awards for participation in PIQE activities.
   - o Provide PIQE training at several levels.

- o Refine current processes and establish new processes for measuring quality and productivity achievements.

- o Development an environment that encourages employee innovation and creativity.

In addition, through our Annual Management Incentive Program, we plan to encourage our Center Directors to get our managers out on the floor.

3. Approach: We will provide each Center Director with a copy of the PIQE Program document published by our Houston Center. Following this, each Center Director will be asked to respond with a plan to implement a PIQE Program suitable to the contract(s) and customers at that location.

4. Timeframe: Medium

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Computer Sciences Corporation
Applied Technology Division

Address: 6521 Arlington Blvd.
Falls Church, VA 22042

Commitment to Action:

1. Action: We propose to establish a Division-wide PIQE Council chaired by ATD vice president.

2. Anticipated Benefits: The benefit will be an unambiguous message that top management in ATD is committed to quality of our services and increased productivity of our people.

3. Approach: An ATD vice president will be chosen to chair the PIQE Council and be the ATD focal point for quality and productivity. Each center will provide a representative to sit on the Council.

4. Timeframe: Short

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Computer Sciences Corporation
System Sciences Division

Address: 8728 Colesville Road
Silver Spring, MD 20910

Commitment to Action:

1. Action: The System Sciences Division of Computer Sciences Corporation is fully committed to continuing and building upon its existing formal program of Productivity and Quality Improvement. The action to be taken is to continue expansion of our computer software development environment with automated development techniques for increased accuracy and quality with an attendant increase in productivity.

2. Anticipated Benefits: CSC's System Sciences Division has developed and is continuing to improve software development methods, management techniques, and tools that improve the quality and productivity of our products and services. We have gained a 300-percent improvement in productivity and have improved quality by 100 percent over the last 5 years. Our objectives are an improvement in productivity of at least 50 percent over the next 5 years with a commensurate increase in quality.

   We also have targeted gains in our administrative services and support to our projects as more automation is introduced in areas such as technical publications, accounting, and communications.

3. Approach: SSD's approach is to expand our use of methods, new tools, workstations and reusable software in an environment that encourages innovation and achievement. Management commitment to the goals of quality and productivity improvement is supported by providing corporate-wide policies, standards, training, and the improvement of the quality of worklife.

   The CSC-developed Digital System Development Methodology, designed to deliver quality products on time and within budget, will continue to be adapted to our new projects. We are constantly improving our methodologies with each new product as well as evaluating and applying new automated tools that support the methodologies. We continually measure and audit our systems and our projects to ensure cost-effective, quality products.

   We are actively disseminating our plans, goals, and objectives to our employees at all levels. Our suggestion system actively seeks ideas from all staff members and will be continued. We also have a strong educational training program that provides skills enhancement and career development. Programs that promote employee awareness of the need for productivity and quality improvement are planned or are in place. Reward programs are expected to expand to include even higher percentages of our work force.

Our strong commitment to technological innovation to achieve our goals is demonstrated by our new technology investigations and research, and by new technology and tools insertion into the software development process. The creative use of new technology and a highly motivated staff will increase the productivity and quality of our products and services.

Our commitment is to reinforce and build on these programs and build on SSD's tradition of dedication, pride and teamwork in producing high-quality software products and services at highly competitive cost.

4. Timeframe: SSD efforts are long-term commitments (5 years). Parts of our program have been operating for nearly 10 years, other parts for a shorter period. Steady, long-term measurable results are the goal.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: U.S. Department of Agriculture
Agricultural Research Service

Address: USDA-ARS, Room 358-A, Administration Building
Washington, DC 20250

Commitment to Action:

1. Action: A more deliberate and structured effort will be implemented to bring Agricultural Research Service (ARS) research results to the attention of industry in the agricultural economy.

2. Anticipated Benefits: Productivity for ARS includes not only doing the research but also getting the results used to the benefit of the U.S. economy and consumers. We believe this latter phase, called technology transfer, is the weaker of the two components, so our action plan is focused on it.

3. Approach: The effort will include at least one meeting with appropriate client groups at each separate ARS research facility. In addition, two significant research accomplishment by ARS scientists will be selected (with assistance by our National Program Staff) for a major "push" to achieve industry adoption.

4. Timeframe: Medium--1 to 5 years.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: United States Air Force
Air Force Systems Command

Address: Washington, DC

Commitment to Action:

1. Action: The Command Model Installation Program allows maximum freedom to local units in order to seek relief from impediments to productivity, and to try new ideas and procedures.

2. Anticipated Benefits: Regulations, policies, organizations, procedures, etc.,--anything that impedes quality and productivity--can now be questioned without a lot of "paperwork." Anything and everything can be questioned.

3. Approach: Each major Air Command has been directed to establish a formal Command Model Installation Program. The local units are encouraged to find new and better ways to organize, operate, and improve productivity. Field commands are free to exercise maximum judgment in eliminating constraints to efficient operation. The main incentive is that the field commands retain all monetary savings generated within a given fiscal year. The authority to say yes to an idea is to be exercised as far down the chain as possible as a "staff" or command decision; the authority to say NO to an idea is retained at high levels and is strictly a command prerogative not to be directly exercised by the staff.

4. Timeframe: This program will have a duration that spans the short-, medium-, and long-term timeframes.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Headquarters, U.S. Army Materiel Command

Address: Alexandria, VA 22304

Commitment to Action:

1. Action: Reduction of materiel acquisition time from initial concept through delivery of system to the user by supporting the Army Streamlined Acquisition Program.

2. Anticipated Benefits:

   - o Delivery of the right materiel, of the best possible quality, to the soldier, faster.
   - o Delivery of the right materiel at the right price.
   - o This commitment counteracts the following:
     - -- an acquisition process that is lengthening
     - -- threat overtaking design
     - -- state-of-the-art overtaking production
     - -- decision-makers change
     - -- we cannot afford what we develop
     - -- equipment obsolete when fielded
     - -- diminished credibility

3. Approach:

   - o Requirements stated in operational terms/performance bands.
   - o Practical demonstrations to confirm both the operational concepts and system/technical approach.
   - o Tailoring of specifications, standards, and data requirements.
   - o Early feedback on Manpower and Personnel Integration (MANPRINT), Integrated Logistics Support and producibility concerns.
   - o Integration of user-developer testing and employs continuous evaluation using shared data from a common test data base.
   - o Hand-tooled prototypes and limited production prior to entry into full-scale production.

- o Emphasis on production prove out during development.
- o Establishes a 1- to 2-year goal from the beginning of production to First Unit Equipped.

4. Timeframe: Medium - 1 to 5 years.

Organizations:

U.S. Army Armament, Munitions, and Chemical Command
Rock Island, IL

U.S. Army Test and Evaluation Command
Aberdeen Proving Ground, MD

U.S. Army Troop Support Command
St. Louis, MO

U.S. Army Security Affairs Command
Alexandria, VA

Commitment to Action:

1. Action: Development of effective productivity measurement systems.

2. Anticipated Benefits: Effective measures are fundamental to knowing if goals have been achieved. They are essential to the management process for problem-solving and decision-making.

3. Approach: The U.S. Army Armament, Munitions, and Chemical Command is working with a consultant to develop effective measurement systems. A pilot total factor productivity measurement system is being implemented at Pine Bluff Arsenal, Arkansas. Phase II will be implemented at the McAlester Army Ammunition Plant, McAlester, Oklahoma. Next, the headquarters elements will work on application of the models to white collar worksites. After testing the white collar systems, results will be shared with entire Army Materiel Command.

   U.S. Army Test and Evaluation Command will continue the development and implementation of a productivity measurement system which provides capability to address productivity improvement in testing.

   U.S. Army Troop Support Command will refine a system begun in FY 1986 to measure overall command productivity. Productivity output indicators representative of major work efforts were identified and are being tracked.

   U.S. Army Security Affairs Command is continuing its efforts toward development of an AMC-wide security assistance productivity measurement model as well as one which measures productivity of the Security Affairs Command.

4. Timeframe: Medium - 1 to 5 years.

Organizations:

U.S. Army Aviation Systems Command
St. Louis, MO

U.S. Army Communications-Electronics Command
Fort Monmouth, NJ

U.S. Army Missile Command
Huntsville, AL

U.S. Army Tank-Automotive Command
Warren, MI

Commitment to Action:

1. Action: Concentration on productivity improvement through the human aspects of the workplace. Efforts are underway at several locations to engender a more participative and less autocratic environment.

2. Anticipated Benefits: Although technological solutions are more glamorous and easier to quantify, the major gains in productivity improvement lie in human behavior. In FY 1987, we will be striving to break free of the "answerable to higher headquarters" syndrome and instill the attitude that managers and employees are first answerable to themselves and their work centers. Middle and first line managers will be encouraged to take risks, to do the things that are best for their owns areas of responsibility--to uncover and address problem areas.

3. Approach: The U.S. Army Aviation Systems Command is expanding their Organizational Productivity Team Program, a team-oriented study effort. It is based on the philosophy that ownership in recommended solutions will result in corrective actions being adopted with greater enthusiasm.

   During the past year, the U.S. Army Communications-Electronics Command had identified and publicized its corporate values: excellence, teamwork, caring, and creating. In promoting these values and making them a part of the workplace, the command is undertaking the training of its managers in participative management principles.

   The U.S. Army Missile Command is promoting ownership within its work force for the success of the weapons systems it manages by incorporating productivity concerns in strategic planning at all management levels and by encouraging employee involvement in identifying productivity initiatives that enhance their efforts to work smarter.

Total force involvement and creativity are the thrusts undertaken by the U.S. Army Tank-Automotive Command. Performance management training which addresses the need for management to use positive reinforcement and feedback to generate improved job performance, satisfaction, and productivity, is being conducted for supervisors.

4. Timeframe: Medium - 1 to 5 years

Organization:

U.S. Army Depot System Command
Chambersburg, PA

Commitment of Action:

1. Action: Expansion of the Model Installation Program throughout the depot system.

2. Anticipated Benefits: Increased employee participation in workplace operations through suggestions which reduce "red tape."

3. Approach: During the 2-year DOD test of the Model Installation Program, the two depots which have participated averaged 15 waiver requests per month.

   Many ideas already tested by the "model" depots can be readily adopted by the others.

4. Timeframe: Short - less than 1 year.

## U.S. Army Material Command (continued)

Organization:

U.S. Army Laboratory Command
Adelphi, MD

Commitment to Action:

1. Action: Expeditious transition of technology from the laboratories to fielded equipment provided the soldier.

2. Anticipated Benefits: Lower costs to taxpayer and increased confidence of the soldier in his equipment.

3. Approach:

   - o Capitalize on small team effectiveness.
     - -- good internal communications
     - -- less encumbered by organization structure
     - -- easily motivated
   - o Form technology insertion teams.
     - -- laboratory scientist/engineer
     - -- a user representative
     - -- Research, Development, Engineering (RDE) Center development/ production engineer

4. Timeframe: Medium - 1 to 5 years.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: U.S. Department of Commerce

Address: 14th and Constitution Avenue
Washington, DC 20230

Commitment to Action:

1. Action: The Department of Commerce's productivity improvement program, Project PRIDE, stresses the theme that productivity improvement must be addressed systematically to produce continuing and significant results in Commerce organizations. We employ a broad spectrum of program and administrative techniques to achieve productivity improvement, that include consolidations; reorganizations; increased application of automation in all forms; quality circles; work simplification; training; as well as improved management policies, procedures, and practices.

   The key elements of the program are a strong commitment from the Secretary on down, management and employee awareness and involvement, a strong incentives program, accountability and valid measures, and well-defined written goals and objectives.

2. Anticipated Benefits: Project PRIDE has set a goal of 20 percent productivity improvement in selected program functions by 1992. As of October 1986, a total of 9,381 FTE's--43 percent of the eligible work force--were covered under a productivity improvement initiative. In addition to traditional productivity improvements, we also strive for increases in quality, reliability of product, dependability of service, and commitment to excellence.

3. Approach: Thus far, we have developed nine productivity improvement prototypes from Commerce program areas. These prototypes focus on a wide range of management improvement techniques to achieve increased productivity and quality. In support of Project PRIDE, the Office of Management and Organization (OMO) will conduct productivity and management studies; provide consulting services to program officials (e.g., develop study schedules and plans, identify alternatives for productivity improvement, and establish well-defined measures); and assist management in tracking, documenting, and reporting productivity accomplishment to the Office of Management and Budget.

4. Timeframe: The Department of Commerce views productivity improvement as a long-term effort.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Naval Air Systems Command (AIR-42)
Attn: Mr. Eric E. Anschutz

Address: Washington, DC 20361

Commitment to Action:

1. Action: We are taking steps to effect productivity/quality improvements through a change in our corporate culture. The change will result from command-wide implementation of participative management and productivity gainsharing.

2. Anticipated Benefits: Participative management is expected to close the gap between management and the work force; gainsharing is expected to inspire the work force, create a bias for action, and motivate innovation.

3. Approach: Management commitment; designation in each organizational unit of productivity principals; development of a productivity plan by each unit; corporate implementation.

4. Timeframe: Effort will be long term; indeed, we expect to institutionalize this effort.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Department of the Navy - Office of the Assistant Secretary for Shipbuilding and Logistics

Address: Specification Control Advocate General of the Navy
Office of the Assistant Secretary (Shipbuilding and Logistics)
United States Navy
Washington, DC 20360-5000

Commitment to Action:

1. Action: Presidential Executive Order 12552 established a Productivity Improvement Program for the Federal Government with the goal to improve the quality, timeliness, and efficiency of service to the public and to achieve a 20-percent increase in productivity in appropriate functions by 1992. The Department of the Navy (DON) plans to meet and exceed this goal by implementing targets, goals, strategies, and actions required for near-term and long-range improvement in the total performance of all DON operations described in the DON Total Performance/Productivity Improvement Action Plan.

2. Anticipated Benefits: With the omnipresent squeeze on the defense dollar, the DON must find ways to do more with less to remain competitive and support and maintain the 600-ship Navy and our Marine forces. To meet this challenge, the implementation of long-range organizational cultural change will sustain the ability of the DON to streamline its operations and meet mission objectives more efficiently and effectively. Emphasis is on continuous improvement in cost, quality, and timeliness; providing the ability to acquire and maintain the most technologically advanced and complex weapon systems needed for deterrence.

3. Approach: A two-phased approach is being taken to implement the DON's Action Plan. The first involves implementation of near-term improvement to enhance the efficiency of current operations through management reforms. The bulk of the DON's industrial shore establishment is implementing these forms as they provide critical support to Fleet readiness and have high potential for significant near-term improvement and cost savings.

   The second involves creating an environment of continuous performance improvement through cultural change. The following initial goals with associate action items have been established in the Action Plan to lead the DON toward such an environment:

   1. Establish guidelines for achieving and measuring progress toward the President's Executive Order goal.

   2. By October 1988, implement a plan for organizational cultural change within DON which emphasizes continuous improvement, customer satisfaction, and motivation of people.

3. Accelerate implementation of policy to reward productivity through gainsharing.

4. Establish and demonstrate management commitment, support, and involvement from the highest level of command to the activity level.

5. By September 1988, modify processes/policies to significantly shorten procurement lead time.

6. Develop performance/productivity training and awareness programs, for all levels of the chain of command.

7. Identify and remove productivity roadblocks, emphasizing rapid handling of proposed regulation changes as in the Model Installation and Model Installation Extension Programs.

8. By September 1989, effect savings at NIF activities, meet SECNAV and OMB targets, and ensure the ability to compete with private industry.

9. Develop and initiate implementation of a master plan for aggressive use of capital investment programs.

10. By September 1988, conduct zero-based review of all DON financial regulations and cancel/revise at least 50 percent.

11. By September 1988, conduct zero-based review of all DON personnel regulations and cancel/revise at least 50 percent.

12. By October 1987, all shore DON activities will establish measures of performance/productivity and develop a yearly 5-year productivity plan.

4. Timeframe: The near-term effort will require 1 to 2 years. The long-range cultural change will require 5 years and beyond for continuous improvement.

# QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: EG&G Florida

Address: P.O. Box 21267
Kennedy Space Center, FL 32815

Commitment to Action:

1. Action: EG&G Florida intends to institutionalize the productivity improvement process throughout all elements of the Base Operations Contract at Kennedy Space Center.

2. Anticipated Benefits: Productivity improvements will provide the basis for a stable, competitive, and highly successful organization that will provide continuously better products and services at lower costs.

3. Approach: EG&G Florida's approach for implementing the institutionalization of the productivity improvement process includes the following:

   - o Continually demonstrating top-level involvement, support, and commitment.
   - o Developing annual organizational productivity improvement goals.
   - o Involving all employees in the improvement process.
   - o Conducting awareness activities throughout the company.
   - o Promoting an active Employee Suggestion Program.
   - o Conducting Productivity Seminars for all managers.
   - o Promoting Quality Circles and other problem-solving groups.
   - o Conducting Work Simplification Workshops.

4. Timeframe: The duration of our improvement efforts will be an ongoing process to ensure that productivity improvements are sustained in all elements of EG&G Florida.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Fairchild Space Company

Address: 20301 Century Blvd.
Germantown, MD 20874

Commitment to Action:

1. Action: Revise our customary product development process by delaying design release for production until engineering has completed full prototype qualification testing. Institute periodic indepth design reviews by internal peer groups. Architect the product to serve a wide variety of applications and provide for ease of technology insertion as improved technology becomes available. Use advanced packaging and manufacturing technologies and automated design tools.

2. Anticipated Benefits: By committing to the above actions, Fairchild Space Company believes that we will reduce the overall cost of engineering development by producing a better design with fewer design errors. They should reduce the cost of manufacturing and should permit easy adaptation of the production to a wide variety of applications. The product should also be able to benefit from future technology thus permitting increasing capability and expanding use by our NASA, military, and commercial customers.

3. Approach: Structure a market-based design and development program under Independent Research and Development funds for an advanced solid-state recorder (SSR) that provides superior performance to mechanical tape recorders currently in use on spacecraft and other high-reliability aerospace applications.

4. Timeframe: The duration of the effort will cover a medium timeframe of 3 to 5 years. This year, 1987, will cover the initial design phases through PDR and CDR as well as continuing market research. The engineering prototype will be manufactured and tested (including full environmental qualification) by late 1988. The first flight unit is scheduled for late 1989 to 1990.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Gulfstream Aerospace Corporation

Address: P.O. Box 2206
Savannah, GA 31402

Commitment to Action:

1. Action: Gulfstream Aerospace has embarked on a company-wide Quality Improvement Process. With the aid of an outside consultant group, we are beginning an educational process which is intended to change the quality culture of the entire organization.

2. Anticipated Benefits: By instilling a "do it right the first time" ethic, we hope to save upwards of 10 percent in production costs by eliminating scrap and rework. Quality and productivity improvements are linked together in this process.

3. Approach: Our approach to Quality Improvement is to create an awareness that the quality of worklife can be made more pleasant by casting off inefficient systems and procedures and substituting common-sense solutions to our daily problems. We start by self-analysis of our current way of doing business. We gain initial confidence by solving a few relatively easy production problems using work teams composed of respected members of the affected groups. When we have piqued the interest of the remaining employees, we begin the educational process--workshops which create a quality planning process for managers, and a step-by-step problem-solving process for all employees. We wrap a senior management commitment around the whole process and look forward to a sustaining effort which will consolidate our gains for the future.

4. Timeframe: We hope to see significant results within 1 year and a new quality culture in place in 2 years. The sustaining effort through Quality Improvement Teams will go on forever.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Hercules Aerospace Company
Aerospace Products Group
A Hercules Incorporated Company

Address: P.O. Box 98
Magna, UT 84044-0098

Commitment to Action:

1. Action: Quality Improvement Process. The Aerospace Products Group has initiated a quality improvement process based on the Phillip Crosby discipline supplemental with statistical quality control techniques. This is a total commitment by executive management and middle management with the objective of creating a new quality culture throughout the company. At this point, every manager, supervisor, and professional employee has received a minimum of 24 hours of in-class training. We are continuing with a minimum of 12 hours of in-class training for every exempt and wage employee. A complete hierarchy of planning, implementation, and auditing teams involving executive steering committees and working groups at all levels is conducting the process, which will continue as long as this company is operating.

   Productivity Improvement Process. Hercules has just completed and put into service the first phase of an aggressive investment in motor manufacturing automation. This $15 million plant incorporates the very latest in robotic materials handling, mixing, and casting operations with central computer control and data acquisition for process verification and quality control. We are committed to continue this process for all space propulsion products and operations.

2. Anticipated Benefits: Our first goal is to eliminate the cost of failure from the life-cycle costs of solid propulsion systems--both material cost and human cost. The second goal is to reduce the cost contributed by solid propulsion boosters to payload launch costs by two-thirds in the next decade. A substantial part of these goals will derive from the productivity/quality commitment defined above.

3. Approach: Quality Improvement Process. This process will continue with completion of training for all non-exempt and wage personnel and installation of a requirements-based quality culture in which formal procedures for permanent correction of root causes of quality deficiences are followed.

   Productivity Improvement Process. Completion of Phase II expansion of the Propulsion Factory for the 1990's will provide the most productive facilities in the world for NASA's advanced solid rocket motor (ASRM) pending your firm incentive for investment.

4. Timeframe: Hercules quality improvement process is underway and will continue through the long term changing in style and intensity as progress is made and needs change. The next phase of productivity improvement is directly linked to NASA SRM procurement plan.

# QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Hercules Aerospace Company
Instrument Systems Division
Simmonds Precision Products Incorporated
A subsidiary of Hercules Incorporated

Address: Panton Road
Vegennes, VT 05491

Commitment to Action:

1. Action: Product Support Task Teams consisting of Quality, Design, Industrial, and Manufacturing Engineering personnel, will be charterd to actively pursue ways to improve quality and productivity (Qualitivity).

2. Anticipated Benefits: The Product Support Teams, assigned to each major manufacturing work center, will focus on tactical areas of improvement to increase the quality of the product while improving the productivity of the process. Their activities are expected to reduce our Cost of Sales while benefiting the Division by reducing rework and scrap. The theme of each of these teams will be "Doing it Right the First Time."

3. Approach: Each Product Support Team will be responsible to track quality and productivity statistics in their assigned department. They will perform corrective action by analyzing the root cause of defects in an attempt to reduce the number of absolute defects. The task teams are dedicated to remain in place within the major work centers and will report their progress in reducing defects, rework and scrap to the Quality Council on a monthly basis. They will also report status against predetermined goals that measure quality and productivity within their assigned areas. The Quality Council is chaired by the Division President and his direct staff.

4. Timeframe: The duration of the effect is expected to last from 1 to 5 years and longer if effective. The decision to extend the concept will be reviewed at least annually as part of the Division business strategy process.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Honeywell, Inc.
Space and Strategic Avionics Division

Address: 13350 U.S. Highway 19 S.
Clearwater, FL 33546

Commitment to Action:

1. Action: Implement Operations' Quality/Productivity Improvement Plans:

   - o Excellence Through Continual Improvement Program

2. Anticipated Benefits:

   - o More effective use of manpower.
   - o Improvements in process efficiences with new equipment and methods and new operator workstations in the factory.
   - o Reduction in material caused rework.
   - o Improve communications between management/supervision and work force.
   - o Enhanced capability to conduct engineering/prototype programs and production program simultaneously.

3. Approach:

   - o Demonstrate management commitment, to quality of work, quality of management, and quality of worklife with active participation of managers and supervisors on teams.
   - o Involve everyone in improving the operation by formation of teams to look for and undertake productivity/quality improvement projects, and implement to solutions.
   - o Use Juran techniques and statistical process control on selected problems.
   - o Use Process-Flow-Analysis to eliminate production bottlenecks and reduce cycle times.
   - o Conduct Material Excellence Program, identifying key vendors, providing feedback on performance (quality and delivery), establishing quality as first priority at vendors, and using Vendor Assessment Teams and Material Acquisition Center Teams to implement process improvements, where required.

- o Conduct additional meetings, sensing sessions, MBWA to facilitate communications.

4. Timeframe: Short

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Honeywell, Inc.
Space and Strategic Avionics Division

Address: 13350 U.S. Highway 19 S.
Clearwater, FL 33546

Commitment to Action:

1. Action: Design-to-Production Transition (DTPT). Continue to improve methods and procedures to input production requirements and expertise into the design process.

2. Anticipated Benefits: Ensure that released designs reflect optimum producibility and testability and that quality, performance, cost, and schedule requirements can be met.

3. Approach: Assign Production Engineers to the Design Teams at the start of programs. Production Engineers will follow device/system through engineering, prototype phases into production. Formalize DTPT procedures, including checklists. Ensure that all new programs have adequate funding for DTPT.

4. Timeframe: Medium

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Lockheed Engineering and Management Services Company, Inc.
R.B. (Bob) Young, Jr., President

Address: 2400 NASA Road I
P.O. Box 58561
Houston, TX 77258-8561

Commitment to Action:

The LEMSCO team has selected the following as its 1987 goals for productivity and quality:

Qualitative Goals

- Be and be recognized as a technical services industry leader in quality and productivity performance.
- Be and be recognized throughout Lockheed as a leader in leadership development programs.
- Provide contractor community leadership for involving NASA contractors in NASA quality and productivity efforts at NASA JSC including joint NASA/contractor training programs.

Quantitative Goals

- Win the 1986 Excellence Award for Support Services.
- Submit at least $3 million in cost reductions to NASA.
- Initiate at least two contractor investment projects with cost sharing of customer savings from productivity improvement.
- Complete development of the Lockheed Employee Team process and have a least 15 teams active on NASA/contracts during the year. Participate on at least three joint NASA/contractor NASA Employee Teams.
- Conduct at least two employee development programs led by senior executives at each program location.
- Provide Distinctions of Leadership or Distinctions of Coaching training to an additional 200 employees.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Lockheed-Georgia Company

Address: 86 South Cobb Drive
Marietta, GA 30063

Commitment to Action:

1. Action: Institute a program of total quality awareness and involvement for all employees in the Company. Use the concept of each employee being a "customer" and a "supplier" as work is performed in all functional organizations.

2. Anticipated Benefits: We anticipate enhancing quality performance through the reduction of rejections, repair, and rework. Productivity is expected to improve since work will be done right the first time and every time.

3. Approach: Each functional Branch has prepared a program to ensure quality awareness on the part of each employee. The program will include employee involvement, brainstorming sessions, crew meetings and feedback regarding quality improvement suggestions. Goals will be established by each organization and reports provided to the employees regarding accomplishments. Key to the success of the program is an attitude change on the part of management and labor to examine their own roles in the quality ethic and productivity.

4. Timeframe: We expect to start seeing results within 6 months of the kick-off which occurred in late January 1987; however, the full results will be seen in 3 to 5 years.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Lockheed Missiles & Space Company, Inc.

Address: 1111 Lockheed Way; P.O. Box 3504; Sunnyvale, CA 94088-3504
0/10-04, B/101; Robert L. Vaughn, Director; LMSC Productivity

Commitment to Action:

1. Action: A developed Two-Year Productivity Program plan describes continued building on framework and organization that was established during the first 6 years of LMSC's Productivity/Quality Improvement program's existence. The building process will help ensure that LMSC's competitive position remains strong in the future.

   NOTE: The enclosed Two-Year Plan states in detail the actions the Lockheed Missiles & Space Company, Inc. has committed to by way of its Productivity Improvement Program.

2. Anticipated Benefits:

   - The establishment of a production environment that integrates advanced manufacturing technologies for improved productivity-quality and lower costs.

   - A heightened research and development base that advances methods and systems that are integral to the achievement of short- and long-term company goals.

   - A top-quality work force motivated by the desire to excell and conscious of the need for continuous productivity-quality improvement.

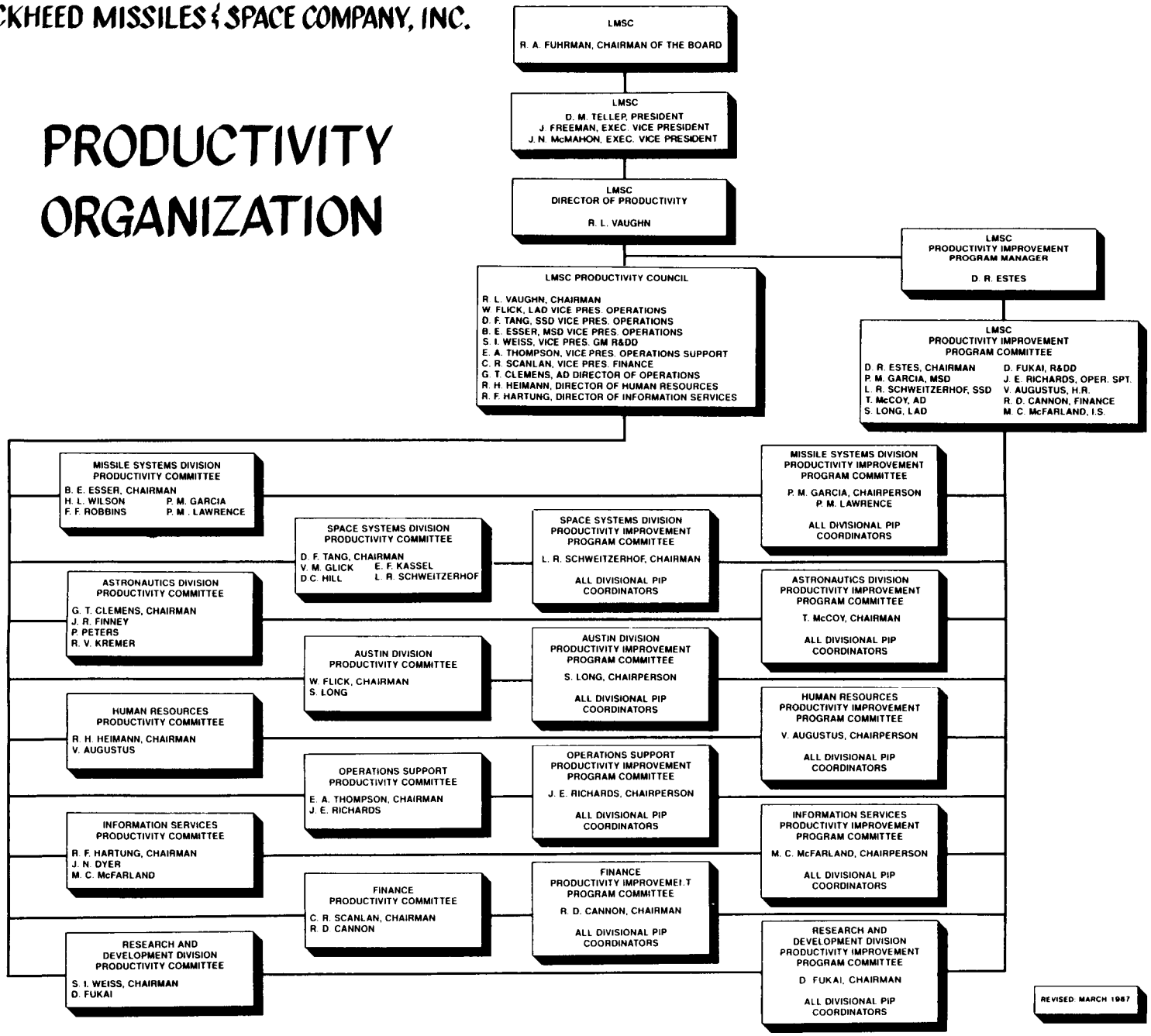
3. Approach: All productivity activities at LMSC continue to be coordinated and administered by the Productivity Program Office with support and guidance from the Productivity Council. Program implementation activities are performed by the divisions through the PIP Committee. Program management ensures that all activities pertaining to productivity planning, coordination, integration, and implementation are carried out in a timely manner. (See enclosed organization chart.)

   Improved productivity-quality is a concern of not just LMSC but the Lockheed Corporation as well. Effort will continue to fulfill the Productivity Program's role as part of the Corporate Productivity Program. The exchange of ideas and information with other Lockheed companies is a significant part of the interface and coordination that long-term productivity-quality improvement requires.

4. Timeframe: Medium - 1 to 5 years (specifically updated every 2 years).

LOCKHEED MISSILES & SPACE COMPANY, INC.

# PRODUCTIVITY ORGANIZATION



## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: LTV Missiles and Electronics Group, Missiles Division

Address: P.O. Box 650003
Dallas, TX 75265-0003

Commitment to Action:

A. Macro Measurement

1. Action: Establish and monitor a macro measurement of total LTV Missile Division productivity; show impact of productivity changes on profitability.

2. Anticipated Benefits: Publicizing the change in productivity at the company level will let everyone know that their productivity efforts are making a difference. The graphs by cost category will clearly depict those areas that had a positive impact on profitability and those areas that need to improve.

3. Approach: Using the prior year as the base year, calculate the change in productivity. This will be displayed both numerically and graphically.

4. Timeframe: Short range.

B. Productivity with Quality Teams (P/Q Teams)

1. Action: Establish problem-solving P/Q Teams in white collar areas as well as in production areas. These will be quality-circle-like teams but adapted to the Missiles Division environment.

2. Anticipated Benefits: Increased productivity through improved motivation and morale of employees; an attitude of improvement; emphasis on quality; more employees trained in problem-solving techniques and the statistical control process.

3. Approach: Train facilitators and analysts and organize the structure for the coordination of P/Q Teams. Establish a core of in-house trainers; train team; publicize and promote P/Q Teams.

4. Timeframe: Medium range.

C. Newsletter

1. Action: Publish six issues of "Getting Involved," a productivity newsletter.

2. Anticipated Benefits: Increased productivity awareness; increased participation in the various productivity programs; better morale through better informed employees.

3. Approach: Use the newsletter to keep Productivity with Quality before the employees. Publicize progress of P/Q Teams, suggestion program, especially pictures of award winners, the measurement system information, etc.

4. Timeframe: Long range - annual effort

D. Missiles Productivity Measurements System (MPMS)

1. Action: Complete implementation of the Missiles Productivity Measurement System which includes the following actions:

   - o Analysis of work groups mission, etc., through Input/Output Analysis
   - o Selection of measures critical to the mission of the groups
   - o Collection of data and reporting
   - o Improvement of processes and procedures

2. Anticipated Benefits: Improved productivity; improved employee motiviation and morale because of more participation; improved competitive posture of Missiles Division.

3. Approach: Continue working with managers to complete the development of their Performance Index, method of data collection, and reporting of results; introduce use of P/Q Teams to improve processes and procedures.

4. Timeframe: Short range with medium-range refinements.

E. Suggestion Program

1. Action: Continue emphasis and employee participation in the Missiles Division's suggestion program.

2. Anticipated Benefits: Annual savings increasing at approximately 10 percent a year and greater employee involvement in meeting company objectives.

3. Approach: Continue share profit program, individual awards publicity and management emphasis on the importance of the program.

4. Timeframe: Long range on a continuous action basis.

# QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: McDonnel Douglas Astronautics Company
Engineering Services

Address: 16055 Space Center Blvd.
Houston, TX 77062

Commitment to Action:

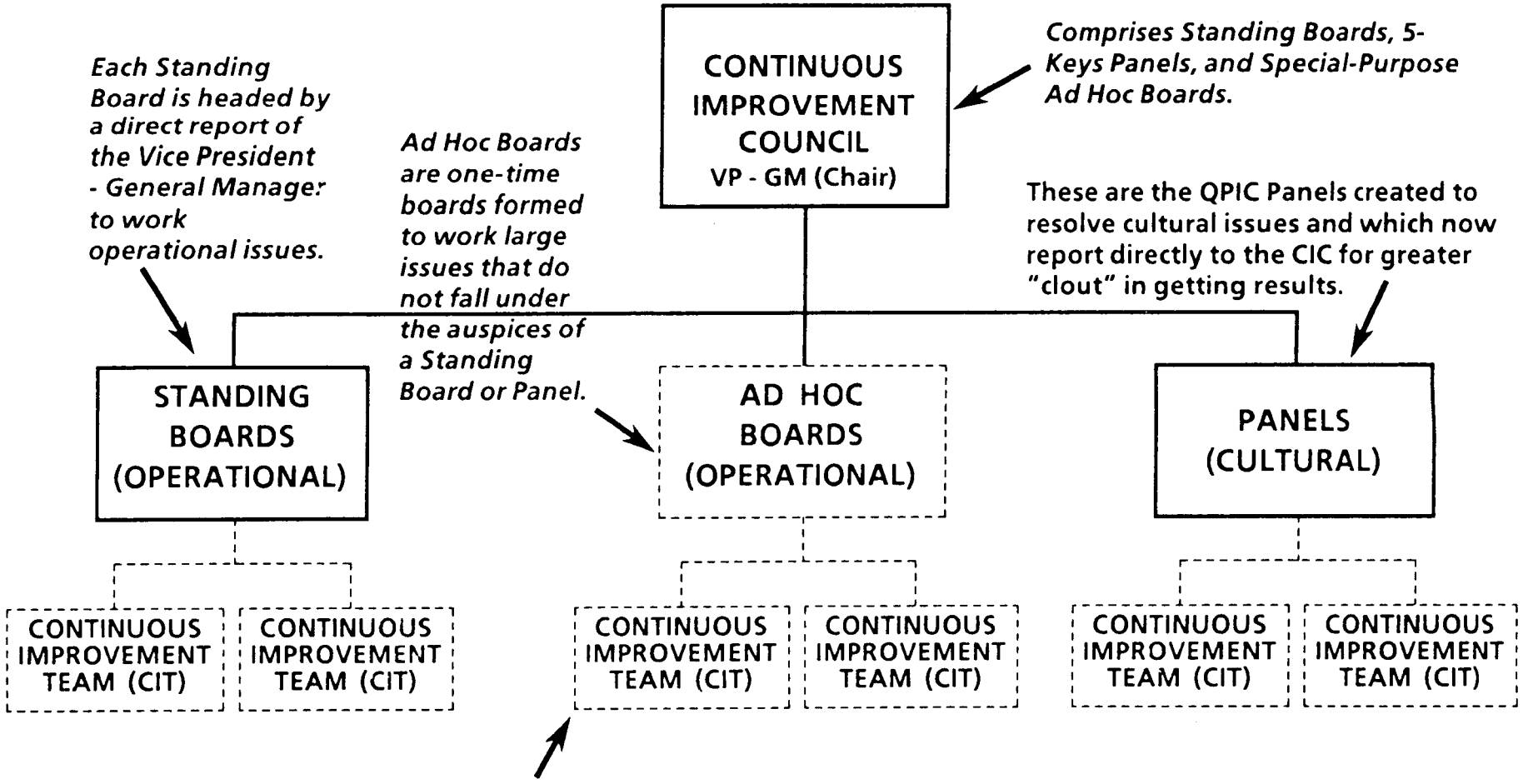
1. Action: To improve our competitive posture and to improve our customer satisfaction, we and our suppliers must increase quality and reduce costs through productivity improvements in our systems and in how we perform our jobs.

2. Anticipated Benefits: Increase sales and return-on-investment.

3. Approach: Formulate a Continuous Improvement Organization consisting of the total business organization plus Ad Hoc and Cultural Change Boards, Panels, and Teams. (See attached chart.)

4. Timeframe: Long range.

# CONTINUOUS IMPROVEMENT COUNCIL




*A Board or Panel may work an issue itself. Usually, however, it will assign the issue to an ad hoc CIT. The goal of the CIC is to have the entire work force involved on a CIT.*

## QUALITY PRODUCTIVITY COMMITMENT TO ACTION

Organization: McDonnel Douglas Astronautics Company - Huntsville Division (MDAC-HSV)

Address: 689 Discovery Drive
Huntsville, AL 35806

Commitment to Action:

1. Action: MDAC-HSV executes its technical programs with an increasing emphasis on quality (doing it right the first time).

   Continuous productivity improvement is attained through the systematic review of our procedures and processes to provide more cost-effective products and services for our customers.

2. Anticipated Benefits: Our customers will receive value for the funds expended for the services of MDAC-HSV.

   Our firm will become more competitive in the marketplace.

   Our employees and shareholders will participate in the reward of increased business opportunities.

3. Approach: Quality consciousness among all employees in a participative management environment is a divisional goal.

   Management sets an example by demonstrating personnel productivity in setting division/department goals, planning implementation, and verifying results.

   Division procedures are reviewed, natural work groups established to seek improved procedures/processes and action taken to install improved operations. Quality emphasis maintained by focus on "error cause removal."

   Human resources training, management, and career development efforts draw on the resources of the McDonnell Douglas Corporation and reinforce the above.

   Performance measurement techniques are used to track these continuing improvement efforts to acknowledge gains in effectiveness, quantity, quality, value, and positive change.

4. Timeframe: Personal productivity emphasis and procedure review - Short.

   Natural work group process improvement tasks - Medium.

   Performance measurement (continuous improvement) - Long.

   Personal productivity and human resources development - Ongoing.

# QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: McDonnell Douglas Electronics Company

Address: 2600 North Third St.
St. Charles, MO 63302

Commitment to Action:

1. Action: McDonnell Douglas Electronics Company (MDEC) has embarked on a process of continuous improvement to enhance our competitive position. Integral to this process is the use of employee idea handling teams at all levels of the company to analyze how they work and to suggest ways to eliminate inefficiencies in our existing system.

2. Anticipated Benefits: MDEC has set company goals for significant business issues (sales, ROI, etc.). The use of idea handling teams to analyze their work processes and to eliminate unneeded work and products will improve our competitive position relative to cost and technology. This improved competitive position will enable MDEC to capture future business opportunites and to achieve our significant business objectives.

3. Approach: Each team will define its individual suppliers, customers, and products. For example, an internal supplier could be an engineering team which provides drawings to a manufacturing team. Each team is ranking its greatest problems or high cost/time consuming tasks. Improvements to eliminate problems and waste are to be defined and discussed with internal suppliers and customers for impact on them. Barriers to improvement will be identified and then eliminated in an ongoing process of continous improvement.

4. Timeframe: Phase one, during which all teams will have processed through the steps described in the Approach section (3), is a short-term of less than 1 year. MDEC has 1,990 goals for cultural transition and significant business issue achievement which incorporate the philosophy of continuous improvement as an integral part of our overall company plan. We expect this to be an ongoing, long-term process.

# QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Martin Marietta Corporation
Denver Aerospace
NASA Space Systems Division

Address: P.O. Box 179
Denver, CO 80201

Commitment to Action:

1. Action: Refine our existing measurement techniques to provide more accurate indications of Productivity and Product Quality "health" status and more explicit identification of "concern" areas. Involve all organization levels in improving achievements in productivity and product quality.

2. Anticipated Benefits:

   - o Reduction in line item resource requirements (labor hours, support personnel, schedule time, etc.).
   - o Reduction in the number of nonconformances and discrepancies in all Division products.
   - o Improved levels of motivation in all personnel.
   - o Greater degree of participation in all levels of the organizations.
   - o Improved profit to sales ratio.

3. Approach:

   - o Finalize our techniques for measurement of product Quality and Productivity "health" and "concern" indicators.
   - o Establish Quality and Productivity goals for each operating organization and develop plans for attaining the desired results.
   - o Establish Team/Individual actions items to resolve issues based on the "concern" indicators.
   - o Maintain records of all actions taken and anticipated benefit to Quality and Productivity.
   - o Utilize measurements system to verify results.
   - o An active system of communication and recognition will be employed to ensure involvement of all organizations and personnel.

4. Timeframe: Our program is currently in effect and is gaining momentum. We expect verifiable results within a 1-year period. The goal setting and concern resolution features of our system will permit continuing improvements for the next several years. Continued innovations in communications, recognition, and incentives will maintain focus on this initiative by our entire organization.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Martin Marietta Corporation
Michoud Aerospace

Address: P.O. Box 29304
New Orleans, LA 70189

Commitment to Action:

1. Action: Systematically modernize and upgrade plant facilities and equipment, emphasizing replacememt with state-of-the-art technology and energy efficiency methods.

2. Anticipated Benefits:

   - o Reduced expenditures for energy (gas and electric).
   - o Reduced hardware rework.
   - o Improved tooling accuracy and repeatability.
   - o A safer work environment.

3. Approach: Pursue a phased implementation schedule as set forth in the following published initiatives:

   - o Five-Year Equipment Plan.
   - o Machine Shop Productivity Upgrades.
   - o Five-Year Utility Cost Reduction Plan.

4. Timeframe: Medium-1 to 5 years.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Martin Marietta Corporation
Michoud Aerospace

Address: P.O. Box 29304
New Orleans, LA 70189

Commitment to Action:

1. Action: Improve engineering design and development through optimum computer and software utilization, including the integration of Computer-Aided-Design with Computer-Aided-Engineering (CAD/CAE).

2. Anticipated Benefits:

   - o Common configuration controlled design data base for all engineering disciplines.
   - o Design to analysis systems interfaces.
   - o Improved engineering turnaround to production problems and anomalies.
   - o Text/graphics data to support management decisions and reviews.
   - o Electronic transmission of engineering data to the customer.

3. Approach: Apply Computer-Aided-Design technology to engineering flight hardware design, tooling, and facility layouts. In addition, implement the integration of CAD, with CAE having the goal of providing design/analysis tools that enhance engineering activities and support all hardware manufacture. Implement 3-D models and CAD drawings of the External Tank flight hardware into the data base. This will establish a CAD/CAE data base which is unique to the aerospace industry.

4. Timeframe: Medium - 1 to 5 years.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Martin Marietta Corporation
Michoud Aerospace

Address: P.O. Box 29304
New Orleans, LA 70189

Commitment to Action:

1. Action: Maximize our human resources through employee-management involvement and commitment to our tradition of Mission Success while maintaining the highest ethical standards at both Martin Marietta Michoud Aerospace and its suppliers/subcontractors.

2. Anticipated Benefits: Many benefits are expected through increased employee-management involvement, including enhanced work force motivation, productivity, and safety leading to measurable improvements in product quality, safety, reliability, and cost reduction.

3. Approach: Employee-management involvement will continue to support, develop, and refine our Performance Enhancement programs which include the following:

   - o Systems Refinement Teams (Quality Circles).
   - o Employee Suggestions System.
   - o Zero Latent Defects Program.
   - o Manned Flight Awareness presentations and activities at both Martin Marietta Michoud Aerospace/subcontractor Mission Success conferences.
   - o Top-down work force training and development in skills improvement, participative management, problem-solving, and teamwork.
   - o Meaningfull, performance-based awards and recognitions program.

4. Timeframe: Medium - 1 to 5 years.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Martin Marietta Corporation
Michoud Aerospace

Address: P.O. Box 29304
New Orleans, LA 70189

Commitment to Action:

1. Action: Improve and optimize manufacturing methods and processes, including extension of this action to our major subcontractors/suppliers.

2. Anticipated Benefits:

   - o Improved product quality, safety, and reliability leading to measurable improvements to External Tank productivity, schedule, and cost.

   - o Reduction in supplier discrepancies and quality performance.

3. Approach:

   - o Continue to expedite technology transfer by being the catalyst for translating technology from MSFC Productivity Enhancement center into production processess at Michoud.

   - o Optimization of manufacturing methods and processes to our major subcontractors/suppliers through value engineering contract clauses and Martin Marietta Michoud Aerospace/subcontractor Mission Success conferences.

4. Timeframe: Medium - 1 to 5 years.

# QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Morton Thiokol, Inc., Space Division
Wasatch Operations

Address: P.O. Box 524
Brigham City, UT 84302

Commitment to Action:

1. Action: The present Space Division PIQE Program is being analyzed to identify areas of weakness where the development of new initiatives could lead to improved quality and productivity. The analysis has included a review of PIQE programs conducted by industry leaders. In addition, work shops and seminars structured to provide new ideas and insights have been and will be involved. At the completion of the analysis, a plan of action will be developed for implementing selected new initiatives.

2. Anticipated Benefits: We expect our new initiatives to lead to improved quality, producibility and productivity of the Space Shuttle SRM. We also expect improved morale within our work force as a result of greater levels of participative involvement and pride in a quality product.

3. Approach: The plan of action includes an analysis of the MTI Space Division and Industry leader's PIQE programs to identify improvement needs. This effort constitutes a first phase which is in progress and approximately 50 percent complete.

   The second (Implementation) phase will start immediately upon identification of worthwhile initiatives or improvements to existing programs. Anticipated tasks include the following:

   (1) Implementing a structured Quality Enhancement program.

   (2) Implementing a structured producibility effort.

   (3) Strengthening employee development program.

   (4) Strengthening professional/management development.

   (5) Strengthening employee recognition program.

   (6) Strengthening subcontractor PIQE program.

   (7) Evaluating a gainsharing initiative.

   (8) Strengthening employee participative programs (quality circles, suggestion programs, etc.).

   (9) Other tasks as defined by the Phase I analysis.

4. Timeframe: Anticipated times for fully implementing the above tasks are as follows:

   (1) Short

   (2) Medium

   (3) Medium

   (4) Medium

   (5) Short

   (6) Medium

   (7) Short

   (8) Ongoing improvement

   (9) Not definable at this time

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Office of Aeronautics and Space Technology (OAST)
NASA Headquarters, Code R

Address: National Aeronautics and Space Administration
Washington, DC 20546

Commitment to Action:

1. Action: OAST strategic action planning project coordinating with OAST center's strategic planning processes.

2. Anticipated Benefits: Top-down and bottom-up strategic planning process will be integrated for gaining maximum benefit from strategic planning. The project will enhance potential for program success and quality of working life from employee participation in strategic planning. Participative experience in strategic planning will carry over into strategic management of that plan and lead to a more participative environment throughout OAST.

3. Approach: Outside consultant will analyze OAST circumstances and develop procedures for maximum involvement between HQ and Centers for an overall OAST Strategic Plan. The OAST Strategic Plan will incorporate NASA-wide needs and goals by coordinating with any Headquarters-wide strategic planning group.

4. Timeframe: Medium for consultant; long for project.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Office of Aeronautics and Space Technology (OAST)
NASA Headquarters, Code R

Address: National Aeronautics and Space Administration
Washington, DC 20546

Commitment to Action:

1. Action: Aeronautical technology productivity improvement--wind tunnel testing.

2. Anticipated Benefits: Percentage increase in productivity will enable better use of this national resource.

3. Approach: Studies will be conducted to implement changes and then measure the improvements over time.

4. Timeframe: Long--greater then 5 years.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: National Aeronautics and Space Administration,
Office of Equal Opportunity Programs, Code U

Address: National Aeronautics and Space Administration
Washington, DC 20546

Commitment to Action:

1. Action: Establish and implement a series of skills enhancement opportunities for EO staffs, that includes strategic planning and application, and functional leadership in a multicultural environment, as well as other on-the-job training or academic experiences.

2. Anticipated Benefits: Maintenance of NASA's excellent record and reputation as an equal opportunity employer requires the continuous efforts and commitment of a dedicated and very capable staff. Significant EO progress has been made at NASA; however, numerous challenges still remain, such as getting more minorities and women into supervisory and managerial positions that are more complex and require long-term strategic planning.

3. Approach: Contact NASA experts, such as S/Al Diaz, who has done an indepth study of Strategic Planning methodology, to consult with us on how to plan and meet the numerous EO challenges effectively. Additionally, continue to explore with Dallas Crable and Associates and understand more fully the multicultural mode.

4. Timeframe: Duration of action is expected to be in the medium category, i.e., 1 to 5 years.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: NASA Budget and Administrative Services Branch
Code NHB-1

Address: National Aeronautics and Space Administration
Washington, DC 20546

Commitment to Action:

1. Action: Develop an automated system to manage and track the disposition of NASA Headquarters records, i.e., transfer, storage, and disposal of records.

2. Anticipated Benefits: An automated system will reduce paperwork and provide faster tracking and retrieval of records stored at the National Archives or temporarily stored onsite at Headquarters. The system will provide improved data by office code on quantity, types of records, and destruction dates. Improved data will increase Headquarters offices' confidence in the records disposal system and encourage more records transfers.

3. Approach: Develop a Headquarters-automated system based on National Archives and Records Administration and NASA guidelines, using PC's and appropriate software.

4. Timeframe: Medium - 1 to 5 years.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: NASA Headquarters Human Resources Management
Code NHP

Address: National Aeronautics and Space Administration
Washington, DC 20546

Commitment to Action:

1. Action: Automate on a personal computer the annual incentive award budget allocation.

2. Anticipated Benefits: Automation will reduce need for hand calculations, improve accuracy, reduce time needed to respond to inquiries, and simplify the budget allocation process.

3. Approach: Survey other installations for information/programs that may be available for existing systems and modify or design a system suitable to Headquarters needs.

4. Timeframe: Short - less than 1 year.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Headquarters Information Systems and Technologies Office
Code NHT

Address: National Aeronautics and Space Administration
Washington, DC 20546

Commitment to Action:

1. Action: Consolidate procurement requirements for Headquarters PC compatible micro-computers and conduct a competitive requirements solicitation.

2. Anticipated Benefits: This will reduce the time spent conducting numerous fragmented procurements with often redundant documentation. This action also will significantly improve our ability to be responsive to future requirements.

3. Approach: Work within Code HW (Procurement) to prepare a viable requirements specification and evaluation criteria to complete the requirement and select a provider for current and future (2 years) demands.

4. Timeframe: Medium.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: NASA Supply and Equipment Management Office
Code NIE

Address: National Aeronautics and Space Administration
Washington, DC 20546

Commitment to Action:

1. Action: Develop an automated system to manage and track the excess property disposal process.

2. Anticipated Benefits: An automated system will greatly reduce manually generated paperwork and, to a lesser extent, will reduce overhead through untimely disposition of, and needless retention of, exess property. It also will enhance and potentially improve the redistribution and reuse of excess property thereby reducing unnecessary acquisitions of new property.

3. Approach: By systematically developing an agencywide automated system following agency guidelines on standard system development practices.

4. Timeframe: Medium - 1 to 5 years.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: NASA Security
Code NIS

Address: National Aeronautics and Space Administration
Washington, DC 20546

Commitment to Action:

1. Action: Fully implement a low-cost, effective program for a (NASA) Personnel Reinvestigation Program that meets standards for National Security positions at an affordable cost. Termed, PRI (plus).

2. Anticipated Benefits: Keeping per case costs low while maintaining the necessary quality, will permit NASA to conduct necessary reinvestigation on the entire NASA security-cleared population over the next 5 years. This intangible value is an assurance that, to the extent possible, NASA's population will meet the standards of National Security Directives and OPM implementing regulations.

3. Approach: Budgetary requirements have been revised to support the extensive NASA-wide program. Implementation guidance has been given to center security offices to ensure completion of this program within the next 5 years.

4. Timeframe: Medium - for initial effort; long - as overall program objectives.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: NASA Management Analysis Office
Code NM

Address: National Aeronautics and Space Administration
Washington, DC 20546

Commitment to Action:

1. Action: Conduct organizational performance improvement activities at NASA installations.

2. Anticipated Benefits: An organizational performance improvement focus will assist NASA work groups in identifying and satisfying customer needs, streamlining processes and procedures, measuring progress toward achieving goals and objectives, and increasing employee participation in the strategic planning process.

3. Approach: By applying state-of-the-art techniques and procedures on improving performance in predominately white collar organizations such as NASA.

4. Timeframe: Short; medium - 1 to 5 years; long.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: NASA Management Analysis Office
Code NM

Address: National Aeronautics and Space Administration
Washington, DC 20546

1. Action: Develop and implement an automated productivity measurement system for agencywide scientific and technical publications.

2. Anticipated Benefits: An automated productivity measurement system is one milestone in the NASA FY 1988 Productivity Improvement Initiative in response to the President's Productivity Program (Executive Order 12552). It is expected that this system will provide increased recognition of technical publications as a part of NASA's mission to provide wide dissemination of information to the public. It also will be one tool by which the agency will be able to improve the management of its resources.

3. Approach: A systematic examination of the existing data collection for scientific and technical publications at all NASA installations will be completed. An automated system will be developed using standard system development practices.

4. Timeframe: Short; medium - 1 to 5 years; long.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Directives and Reports Branch
Management Analysis Office
Code NMI

Address: National Aeronautics and Space Administration
Washington, DC 20546

Commitment to Action:

1. Action: Develop a NASA On-line Management Directives System to significantly improve the usability and currency of the NASA Directives System.

2. Anticipated Benefits: An interactive, online directives system will significantly reduce the development, review, approval, distribution, maintenance, access, and extensive paperwork process required for the NASA Directives Systems. An advanced automated system will reduce management review time, decrease reproduction and distribution cost, and increase availability of directives to all personnel agencywide.

3. Approach: A joint NASA/contractor team will design and develop an advanced automated NASA Directives System following agency guidelines and standards used for the development and implementation of uniform agency-wide administrative information systems.

4. Timeframe: Short - less than 1 year; medium - 1 to 5 years; long - greater than 5 years.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: NASA Personnel Programs Division
Code NP

Address: National Aeronautics and Space Administration
Washington, DC 20546

Commitment to Action:

1. Action: Design a more streamlined, responsive, and effective personnel system.

2. Anticipated Benefits: An enhanced, simplified personnel system will permit better, more effective management of our human resources, allow NASA to compete more effectively for top talent, make it easier to reward excellent performance, and reduce paperwork and the administrative burden related to current personnel management processes.

3. Approach: Design an agencywide personnel system to provide the necessary flexibilities which will incorporate the major features in the proposed Civil Service Simplification Act. Implementation of a new system will require coordination/approval of OPM and OMB, as well as legislation.

4. Timeframe: Develop concept - short; Design system - medium; Implementation - medium (depending upon congressional approval).

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Code NT, Information Resources Management Division
Code NX, Facilities Engineering Division

Address: National Aeronautics and Space Administration
Washington, DC 20546

Commitment to Action:

1. Action: We are developing the Institutional Environmental Management System (IEMS) in conjunction with the Facilities Engineering Division, and JSC. This agencywide computerized system will be used at all NASA installations to help manage the agency's environmental management programs.

2. Anticipated Benefits: The system is expected to improve productivity by improving the quality and timeliness of data, enhancing the capabilities of managers to make effective use of the data, and improving compliance with environmental regulations and reporting requirements.

3. Approach: This system is being built as part of the agencywide Automated Information Management (AIM) Program. The system will be built in two phases. Phase One will consist of nine modules, each devoted to a major environmental functional area. Phase Two will consist of 10 modules for minor functional areas.

   The Phase One IEMS will be built in three stages, each of which will cover three functional areas and take approximately 1 year to build. Stage One will consist of modules dealing with hazardous materials, PCB's and other toxic substances, and asbestos.

4. Timeframe: Medium.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Office of Space Science and Applications (OSSA)
Code E

Address: National Aeronautics and Space Administration
Washington, DC 20546

Commitment to Action:

1. Action: Improve interaction and communication between the Headquarters functional offices and the OSSA program office in order to achieve agency/program goals and objectives.

2. Anticipated Benefits: More clear understanding of the responsibilities of those in the Headquarters functional offices who support the OSSA program office and those in the OSSA program office in order to more efficiently and effectively reach what we would hope to be a "mutual" NASA goal.

3. Approach: More involvement of Headquarters functional office management with the OSSA program management in the planning, tracking, reporting, and completion of OSSA program goals.

4. Timeframe: Long. OSSA is currently in the process of identifying major issues which involve functional office participation and is meeting with appropriate functional office management in order to set up the types of reviews beneficial to all involved. It is currently anticipated that these reviews would be ongoing.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Jet Propulsion Laboratory

Address: 4800 Oak Grove Drive
Pasadena, CA 91109

Commitment to Action:

1. Action: A program will be instituted involving the establishment of Quality Councils in key areas, supported by ad hoc Improvement Teams and by other activities designed to increase the extent and depth of participative management. The purpose of such a program is to instill an ethic of continuous quality improvement in the institution at all levels and in all areas.

2. Anticipated Benefits: The action plan focuses on quality improvement, where "quality" is defined to encompass quality of work output, quality of processes, quality of individual work performance, and quality of work-life. It is fully expected that these improvements in quality will automatically lead to productivity improvements as the efficiency of process and the excellence of output improve.

3. Approach: Key elements of the action approach include the following:

   - Establishment of a high-level Steering Committee reporting to the Laboratory Director. The Chairman will be at the Assistant Laboratory Director level and will be JPL's official external representative on quality and productivity.

   - Establishment of Quality Councils in key areas, each chaired by an accountable high-level executive. Each Quality Council will be responsible for assessing potential areas for quality improvements and initiating corresponding action programs.

   - As needs are identified by a Quality Council, ad hoc Improvement Teams will be established for cross-cutting processes. These teams will be responsible for assessment and analysis, action design, and implementation.

   - Other supporting activities, such as Quality Circles, suggestion programs, and performance measurement programs will be instituted as appropriate under direction of each Quality Council.

   - **A supporting broad-based program of training and awareness will be established for top and middle-level managers, for members of Quality Councils, and for ad hoc Improvement Team members and leaders.**

4. Timeframe: The effort is considered as a medium- to long-range program with anticipated initial benefits in the 1- to 2-year time period.

# QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Lyndon B. Johnson Space Center

Address: Houston, TX 77058

Commitment to Action:

1. Action: Broaden the scope of the Johnson Space Center (JSC) productivity effort to one of Team Excellence which includes all major performance areas including safety, quality/reliability, leadership, participation, quality of worklife, productivity/efficiency, innovation, and teamwork. Integrate Team Excellence with strategic planning, focusing on key activities having the greatest impact on JSC's functions and missions.

2. Anticipated Benefits: The Team Excellence concept relates in a more meaningful manner to concepts and ideas which motivate JSC employees, organizations, and contractors. It provides a broader basis for challenging these individuals and organizations.

3. Approach: Use a strategic planning approach which includes a broad involvement of employees at all organizational levels. Process includes a centerwide team-building effort as well as development of strategic goals and objectives.

4. Timeframe: Medium

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Langley Research Center

Address: Hampton, VA 23665

Commitment to Action:

1. Action: To establish at least one employee participation team to assist both Center and contractor employees in the analysis and computation function. It is anticipated that this effort will serve as a catalyst to the overall Quality Circle program at Langley.

2. Anticipated Benefits: Quality Circles at Langley, while still a positive influence, have stabilized. The Quality Circles are all located in either Management Operations or Systems Engineering and Operations Directorates. Quality Circles are concentrated in the technician, clerical, or administrative professional disciplines. Quality Circles work on problems identified by the Quality Circle members themselves.

   The pilot program would take place in our Analysis and Computation Division (ACD) with a support contractor, Unisys, being actively involved. The problems to be addressed will be identified by management. It is envisioned that technical professionals will also be involved. The Employee Participative Team concept is an extension of the Quality Circle approach and should help revitalize our Center employee involvement.

3. Approach: The Unysis local contract manager, who attended the Second NASA Symposium, will serve as a facilitator after attending the Crosby Quality College in Florida in March. He will be assisted by our internal Quality Circle Facilitator. The Chairman of our local Quality Circle Steering Committee, or his Deputy, who both attended the Symposium, will monitor the overall efforts along with the ACD management.

4. Timeframe: Medium - 1 to 5 years.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: NASA Lewis Research Center

Address: 21000 Brookpark Road
Cleveland, OH 44135

Commitment to Action:

1. Action: To develop, implement, and provide resources for a Center Productivity and Quality (PIQE) Program, with participation and ownership by all levels of the organization.

2. Anticipated Benefits: Through this program, the Center hopes to realize improvements in organizational effectiveness, efficiency, quality, timeliness, and/or safety in performing its mission.

3. Approach: The PIQE program provides a framework for management and employees to work together as a team developing and implementing productivity improvements. The program is not a separate entity unto itself, but rather builds on other Center initiatives already underway (participative management, strategic planning, management training, etc.)

   Top management has been asked to demonstrate their commitment to productivity through personal example, ensuring a participative and nonpunitive environment, encouraging teamwork and reasonable risk taking, and rewarding accomplishments. Management is responsible for developing broad, strategic goals for productivity improvement within their organizations. Their role will be to provide guidance, suggestions, and implementing productivity and quality improvement projects.

   First-line supervisors and their work groups will then adapt the strategic productivity and quality goals to their specific organization and add other more specific goals as they deem appropriate. Using participative techniques, the work groups will then translate their goals into specific initiatives. These initiatives may be specific to their group, or may cross functional lines. Groups will be working together as a team to accomplish their goals, and with management to ensure that all affected parties (including customers) are involved. Teams are responsible for developing qualitative or quantitative assessment techniques which are meaningful to their organizations and to their customers.

   The PIQE program office itself serves as a facilitator for planning and implementing productivity initiatives, and helping to remove impediments. It provides or coordinates training required by teams to accomplish their objectives. Finally, the program office serves as a research and information network to generate new ideas for productivity and quality improvement.

4. Timeframe: Medium

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: George C. Marshall Space Flight Center (MSFC)

Address: Marshall Space Flight Center, AL 35812

Commitment to Action:

1. Action: Assess the current productivity improvement program and impact the current plan with the assessment results into an improved strategic plan for quality and productivity improvement.

2. Anticipated Benefits: The assessment of the existing program should lead toward a baseline of the MSFC culture, as well as a better understanding of program responsiveness to all levels of the organization. The new strategic plan will be focused to provide direction for improving the culture, increasing the organizational commitment toward improvement, and a tailoring of initiatives which will be more responsive to all levels of the organization.

3. Approach: The intent is to screen the productivity improvement community to determine the more appropriate expert facilitators for guiding multi-levels of the Center through the assessment and new plan development. As soon as the screening process is completed, arrangements for expert facilitation services and proposal(s), which will more completely define the overall approach, will be pursued.

4. Timeframe: After the selection of the facilitator, the assessment of the existing program and the development of the strategic plan should be completed in approximately 1 year. Our intent, of course, is to monitor the implementation of the plan over the next 4 or 5 years. The plan will be dynamic, and it will be updated periodically to reflect changes or additional improvements in strategy.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: National Space Technology Laboratories (NSTL)

Address: NSTL Station, MS 39529

Commitment to Action:

1. Action: Place increased emphasis on the need for both long- and short-range planning in support of the NSTL mission.

2. Anticipated Benefits: The development of proactive management at all levels of the management structure. Better understanding on the part of every employee of their role in and the importance to the accomplishment of the NSTL mission.

3. Approach: Maintain and disseminate up-to-date goals and objectives for the NSTL with encouragement through retreats, training, and seminars to develop and implement both long- and short-range plans addressing all sectors of NSTL activity.

4. Timeframe: Medium - 1-3 years.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: National Space Technology Laboratories (NSTL)

Address: NSTL Station, MS 39529

Commitment to Action:

1. Action: Foster more open communication and development of teamship between NSTL management and the NASA contractors.

2. Anticipated Benefits: Better understanding of responsibilities and identification and elimination of impediments to mission accomplishment.

3. Approach: Continue, encourage, and promote greater use of employee teams, joint NASA/contractor task teams, as well as joint problem discussion/ resolution sessions.

4. Timeframe: Medium - 1-3 years.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: National Space Technology Laboratories (NSTL)

Address: NSTL Station, MS 39529

Commitment of Action:

1. Action: Continue support for and encourage the further development of work group performance objective matrix, a performance measurement system currently under development at NSTL.

2. Anticipated Benefit: The development of clear, concise measurement systems applicable to a variety of work situations.

3. Approach: Continue development of the objective matrix and encourage implementation in additional selected areas within both the contractor and civil service work force.

4. Timeframe: Medium in that implementation will begin this year and continue through the next several years.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: National Space Technology Laboratories (NSTL)

Address: NSTL Station, MS 39529

Commitment to Action:

1. Action: Foster more timely and greater use of participative techniques both at the mid-management and working-group level both in and outside of NASA.

2. Anticipated Benefits: Provide a larger percentage of the work force with understanding of leadership role, motivation, problem-solving and the decision-making process.

3. Approach: Training will be offered to larger numbers of employees and additional initiatives identified to encourage interest and participation. Additionally, efforts will be directed at strengthening the NSTL Library holdings. Interaction will be encouraged with neighboring industrial and governmental entities through active support of professional organizations.

4. Timeframe: Medium - 1-2 years.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Pan Am World Services, Inc.
Aerospace Division

Address: 1325 North Atlantic Avenue
Cocoa Beach, FL 32931
(Plant Maintenance and Operations Project - JSC
Engineering Support Services Project - KSC
Facility Operations and Support Services Project - NSTL
Shuttle Processing Project - KSC)

Commitments to Action:

1. Action--Plan A: Provide full opportunity for our employees to be involved in improving our performance toward contract requirements.

2. Anticipated Benefits: Improved practicality and/or quality of problem solutions; broader range of innovative/creative ideas for improved performance; fuller use of available human resources; increased employee motivation toward "team" achievement.

3. Approach: Expand use of employee teams to address impediments to performance improvement; increase interest and use of suggestion programs; emphasize new technology knowledge and application.

1. Action--Plan B: Develop our work force to recognize and strive for optimum standards of excellence in all work activity.

2. Anticipated Benefits: Greater customer satisfaction; consistency in expected achievement levels for all work groups; individual commitments to team performance and corporate objectives.

3. Approach: Expand in-house motivational programs; implement specialized training self-development and teamwork concepts; maximize training opportunities to develop work force skills; provide opportunity for educational advancement.

1. Action--Plan C: Implement techniques which effectively evaluate our achievement of improved quality and efficiency of services provided.

2. Anticipated Benefits: Establish a basis for goals setting; set standards for objective performance measurement; ensure flexibility to address changing requirements/conditions/environs; provide criteria for achievement recognition and reward system.

3. Approach: Adopt statistical process techniques to establish trends for analysis; standardize and emphasize employee performance evaluation systems; publicize and emphasize use of recognition and reward programs.

4. Timeframe:

   - o Short term--assess efforts now underway and identify changes needed to meet commitments of all Action Plans.
   - o Medium term--implement changes and/or initiate new/broader-range activity to carry out Action Plans.
   - o Long term--ensure in-place actions remain timed to Project performance needs.

# QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Perkin-Elmer Corporation, Optical Group

Address: 100 Wooster Heights Road
Danbury, CT 06810

Commitment to Action:

1. Action: Optical Group is instituting a Quality and Productivity Improvement Plan which will focus on identification, assessment, and correction of the contributing factors of "unquality" and poor productivity. This commitment is made by executive management with the strongest of intentions to improve the quality of our products, the quality of our services, the quality of the working life of our employees, and the overall productivity of the organization.

2. Anticipated Benefits: Significant among the benefits expected is Perkin-Elmer's opportunity to proactively participate in the solution of one of America's most serious problems. The improvement in the overall condition of our country's manufacturing health is paramount to our ability to maintain leadership in the world and to protect and secure the lives of our people. Improved quality and productivity will provide the tangible benefits of reduced costs, better products, improved competitive position, increased communications, and improved employee morale. The ultimate benefit we expect is customer satisfaction with our products and services which in turn will provide us with new and rewarding challenges for the future.

3. Approach: The base of our strategy is to stimulate open, honest, and constructive assessment of the way we do things and the results of our business. Leadership and example by top management participation is key to the success of the program. Ownership and responsibility for the conditions as they exist rests in the hands of management which must show action and direction for improvement.

   An executive level steering committee is being formed to oversee and guide the implementation of a quality business plan. The plan is in preparation at this time and will stress improvement in quality and productivity through participative management, measurement of quality costs, and demonstrated movement toward the better.

   We intend to focus our efforts on selected key issues while employing many of our successful and existing management tools to correct them. Quality Improvement Teams are to be formed around trained leaders which will attack prioritized problems in a project-to-project fashion. For the 1987 calendar year, we have selected four preliminary goals which, subject to the Steering Committee's approval, will receive the major portion of our attention. They are as follows:

(continued)

- o Improve the quality of the design documentation.
- o Develop a cost of quality accounting system.
- o Make better use of the supplier performance information.
- o Improve quality and productivity communications.

The results of these efforts are to be documented as financial factors and presented for chief executive officer review at his direction. Every employee will be asked to participate on such teams to give their ideas and help in identifying, analyzing, and solving organizational problems. By allowing all employees to participate not only in the actual work of producing goods and services but also the planning and coordinating of that work, management will benefit by sharing their work load and tapping the most valuable resource we have--our employees.

4. Timeframe: Perkin-Elmer envisions their quality and productivity improvement program to extend over a long period of time. Although there are planned and expected short- and mid-range activities/benefits, the overall duration committed to by our executive management is greater than 5 years.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Raytheon Service Company
Logistics Support Division

Address: Mr. Stanley L. Groover
Manager, Logistics Support Depot
Raytheon Service Company
Code 539
Goddard Space Flight Center
Greenbelt, MD 20771

Commitment to Action:

1. Action: Provide automation to the procurement, receipt, and shipment of selected classes of supply items. This will include financial/funds control and status information to customers.

2. Anticipated Benefits: Reduce manual typing and telephone interface with customers by automating customer order input at the same time providing financial/funds control and real-time status information to the customer.

3. Approach: Select specific classes of supply items for inclusion into an online real-time procurement, receiving and shipment system. This order entry system will include automated generation of purchase requests and establishment of computer Receiving files to support customer information. Provide for BAR-Code application on receipt and shipping information. Also provide for financial/funds interface and provide status information on open customer orders.

4. Timeframe: Short - less than 1 year.

# QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: RCA/Aerospace and Defense/Astro-Space Division

Address: P.O. Box 800
Princeton, NJ 08540-0800

A subsidiary of General Electric Company

Commitment of Action:

1. Action: Implement a Quality and Management Improvement Process (Q&MIP). The basic tenets of Q&MIP are as follows:

   - o Quality is conformance to requirements.
   - o Our performance standard is perfection.
   - o Our methodology is prevention.
   - o Results measurements are cost of non-conformances.
   - o Quality is everybody's job.

2. Anticipated Benefits:

   - o Improve performance of all Astro's people.
   - o Improve quality and performance of Astro's products and services.

3. Approach:

   - o Conduct Q&MIP Training Programs to prepare all Astro's employees for participation in Q&MIP and achievement of its goals.
   - o Establish Quality Improvement teams to address issues of non-conformance in Astro's processes and performance and provide recommendations to alleviate and/or correct the problems.

4. Timeframe: Q&MIP is a long-term commitment to continually improve Astro's performance, products, and services.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: RCA Service Company
RCA Government Services

Address: Route 38
Cherry Hill, NJ 08358

Commitment to Action:

1. Action: Educate all management personnel in Quality and Management Improvement processes. Establish Quality Improvement Teams and Quality Circles. Monitor performance against Quality objectives.

2. Anticipated Benefits: Improve productivity. Enhance communication and cooperation with customers. Reduce costs.

3. Approach:

   - o Quality and Management Improvement Training Program for management personnel.
   - o Quality Awareness Programs for all employees.
   - o Appoint multidiscipline Quality Improvement Teams to address specific Quality issues.
   - o Establish Quality Circles throughout the organization.
   - o Establish a Quality Improvement function to support training programs, facilitate implementation of Quality Improvement Teams/Quality Circles, and monitor/report progress.

4. Timeframe: Continuous

# QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Rockwell International Corporation
Space Transportation Systems Division

Address: 12214 Lakewood Boulevard
Downey, CA 90241

Commitment to Action:

1. Action: We have a plan, which we are implementing, that will regain and build upon our record of quality and productivity based on our earlier delivery of four shuttle orbiters. This plan for building OV-105 is entitled Coming Out Stronger.

2. Anticipated Benefits: Our $C^3$ approach--Controls, Commitment, and Confidence--involves everyone. It tasks management and employees, both in-house and suppliers, to meet our objectives. We plan to meet or improve upon previous learning curves for additional productivity gains, by applying effective process management and controls to reduce nonconformances and thus improve on the quality of our hardware/software at all phases of the build cycle.

3. Approach: Our approach will assign responsibilities in three clearly defined areas. Building on our lessons learned, we will retain controls in the design process, and revitalize and strengthen in-process manufacturing participation instituted during earlier production. Our efforts in training, team activities, recognition and communication will be highlighted through visual team commitment displays portraying our dedication and results of our actions. The final area of emphasis involves ensuring confidence in our product/services. It is based on a systematic method of real-time spot checks, both in-house and at suppliers, to verify that quality is being built into our products.

4. Timeframe: Our effort is of medium duration, i.e., 1 to 5 years during the period of completion of OV-105. We envision, however, that our efforts will become an ongoing part of our culture and thus will transcend into long-term aerospace business ventures.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: The Singer Company
Space Programs Operations
Link Flight Simulation Division

Address: 2224 Bay Area Boulevard
Houston, TX 77058

Commitment to Action:

1. Action: Evaluate the technical expertise of the NASA STS facility maintenance and operations (M&O) contractor for potential use of their personnel as subcontractors to Link in the SMTF Upgrade development task.

2. Anticipated Benefits:

   - o Will alleviate the necessity to expend dollars in the hiring and training of outside experts to perform the M&O task.
   - o By using the NASA STS facility M&O contractor personnel in a subcontractor capacity, the costs of transitioning the maintenance and operation of the new system to STSOC will be meaningful.

3. Approach: Subcontract for the present NASA STS expertise in support of the M&O tasks in support of the SMTF Upgrade.

4. Timeframe: Medium - Present through December 1988.

# QUALITY AND PRODUCTIVITY COMMITMENTS TO ACTION

Organization: Spar Aerospace Limited
Remote Manipulator Systems Division

Address: 1700 Ormont Drive
Weston, Ontario M9L 2W7

Commitment to Action:

1. Action: SPAR RMSD has a mature, fully documented Productivity and Quality Improvement Plan. The process has been in place for 4 years and as it evolves, we issue a new plan each year to address specific and general issues.

   Our Improvement Philosophy is based on the following objective "...build a never-ending participative process whereby we create a state of mind in all our personnel to find better ways to do their jobs..." (this objective was set in 1983).

   One of the general issues appearing in the 1987 Plan is to continue to expand the percentage of staff who directly participate in improvement initiatives and multidiscipline working groups. One hundred percent of staff receive communication on Improvement Plans on a regular basis. Specifically, we wish to increase direct participation in 1987 from 30 percent up to 40 percent.

2. Anticipated Benefits: Our whole approach to improvement is changing our culture by implementing the general objective stated above.

   By increasing the level of direct participation, we will increase personal commitment thereby creating the state of mind to find better ways to do our jobs.

3. Approach: Our Improvement Plan for 1987 includes a number of specific issues, some general issues, and the activities of multidiscipline working groups who will identify real-time initiatives to be launched.

   With respect to specific issues, these include suggestions from all departments. During 1987, we will set out to involve new people in the implementation of each action plan.

   The general issues include the following:

   - **Increased communications**
   - **Growth of our Suggestion Plan**
   - **Increased middle management involvement**
   - Incorporation of results into proposals for new business

With respect to the use of multidiscipline working groups, new initiatives are being identified for action on a regular basis. As each group is formed, we will ensure that the participants include staff who have not yet directly participated; typically a group includes four to eight people from a range of skills and levels of seniority.

4. Timeframe: The initiative is a medium-term, 1-year Action Plan.

# QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: TRW, Inc.
Electronics and Defense Sector

Address: Mr. Edsel D. Dunford
Vice President and Deputy General Manager
One Space Park
Redondo Beach, CA 90278

Commitment to Action:

1. Action: Implement specific projects aimed at quality awareness and continuous improvement in TRW Electronics and Defense Sector products and services. These projects are under the auspices of our sector-wide program which reaches every employee and function, and is institutionalized in the business management and reporting systems.

2. Anticipated Benefits: TRW Electronics and Defense has built a reputation of producing products/services which far exceed the quality and reliability requested by our customers. With ever-changing technology, we must continually enhance and evolve to maintain this tradition of excellence. Additionally, the streamlining of our internal processes such as testing procedures, engineering change reviews, and acquisition techniques improve our productivity. Through these efforts we are able to optimize production schedules and remain cost effective.

3. Approach:

   Step 1: Identification of Key Quality Improvement Projects

   - o Corrective Action Process (Quality of Design)
   - o Scrap, Rework, and Repair
   - o Procured Software
   - o Software Testing Process
   - o Parts Acquisition Process
   - o Measurement Indices
   - o Systems and Standards Training
   - o Communications and Awareness

   Step 2: Identification of Cross-Functional Teams

   Step 3: Establishment of Team Objectives

   Step 4: Problem Area Identification and Recommendations

   Step 5: Implementation

4. Timeframe:

Short - Steps 1, 2, 3

Medium - Steps 4, 5

Long - Continuous process of identifying key quality/productivity targets and implementation of improvement plans

# QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: TRW-OMV Program

Address: A.M. Frew
OMV Program Managers
TRW
One Space Park
R12/1612
Redondo Beach, CA 90278

Commitment to Action:

1. Action: Joint TRW/Marshall Space Flight Center (MSFC) initiatives which will enhance productivity and quality on the OMV program.

2. Anticipated Benefits: Mutual commitment to common MSFC/TRW goals and actions will enhance achievement of OMV product quality and organizational productivity. Direct development cost savings, low life-cycle cost, and high operational availability for 10 years, reusable NSTS element.

3. Approach:

   - o Meetings with MSFC Project and Line Management to develop initiatives.
   - o Publish, communicate, and execute joint plan.
   - o Progress and status reported at Quarterly Management Reviews.

4. Timeframe: OMV program duration (current contract through November 1991)

# QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: Unisys Defense Systems

Address: 8201 Greensboro Drive
McLean, VA 22102

Commitment to Action:

1. Action Quality/Productivity Directors from each group will continue to meet monthly with the Director of Quality/Productivity for Unisys Defense Systems to develop and implement a total improvement process.

2. Anticipated Benefits: Communications and teamwork among the Council members mentioned above will result in a superior total process that is Unisys-specific and standardized across Unisys Defense Systems but is sufficiently adaptable to meet the unique characteristics and needs of individual groups and functional units. This team approach is resulting in cost savings through elimination of any duplication of effort and through sharing of existing resources.

3. Meetings: At monthly Quality/Productivity Council meetings we review the status of each subteam's efforts and identify and plan additional action items. Each subteam has the major responsibility of developing one component of the total process (e.g., training, measurement, awareness/communications, cost of quality). Interviews with all levels of management identify needs and suggestions and ensure that we not only have management commitment but also their involvement and, therefore, ownership. When the total process is sufficiently refined, we will develop high-quality, modular training units to provide employees throughout Unisys Defense Systems with the information and skills they need to do the right thing and to do it right the first time.

4. Timeframe: Initial development of the total process will take approximately 3 years. Refinement of the process will never end.

## QUALITY AND PRODUCTIVITY COMMITMENT TO ACTION

Organization: United Technologies
Norden Systems, Inc.
Thomas M. Kolasa, Chief of Reliability Analysis

Address: P.O. Box 5300
Norwalk, CT 06856

Commitment to Action:

1. Action: Norden is implementing an automated system of solder joint inspection on printed circuit boards using a Vanzetti Laser Inspection System.

2. Anticipated Benefits:

   - o The elimination of the subjective nature of solder joint inspection.
   - o The elimination of production solder joint touchup operations.
   - o The early identification and rework of concealed solder joint defects prior to shipment.
   - o An anticipated productivity improvement in the order of magnitude of ten (10) to one (1).

3. Approach:

   - o The complete analysis of solder joints by means of inspections and laboratory analysis. Thousands of specimens being analyzed.
   - o Implementation of this technology by means of value engineering change proposals with our military customers.

4. Timeframes:

   - o Technology investigation and implementation has been ongoing for approximately two (2) years.
   - o First actual implementation on a military contract is expected in the spring of 1987. NOTE: Preliminary approval has been given.
   - o Total implementation is expected in one (1) to three (3) years.